

Mining and housing: The case of the “Village under the trees” (Kathu – South Africa)

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Abstract

Historically, mine-driven housing has been the only housing option for mine employees. Low-income earners were located in single-sex hostels, while more highly-paid employees received a mine house as a fringe benefit. The demise of apartheid saw an initial attempt to transfer housing responsibilities to employees in terms of ownership-related family housing. However, the response in smaller urban centres and among lower-income mineworkers was limited in extent. This article considers alternatives in housing provision and planning, taking into account the realities in the aftermath of apartheid, the global linkages of the mining industry and the arid nature of Kathu's environment. Essentially, the article argues that, although there are indications of alternative forms of housing and tenure, the boom-bust cycles of mining and the arid nature of the environment are less prominent in the justification of these changes.

MYNBOU EN BEHUISING: DIE GEVAL VAN DIE “DORPIE ONDER DIE BOME” (KATHU – SUID-AFRIKA)

Histories, was myngedrewe behuising die enigste behuisingsofsie vir mynwerkers. Lae-inkomste verdieners het in enkelgeslaghostelle gewoon, terwyl hoëbesoldigde werkers 'n mynbehuisingvoordeel ontvang het. Met die verdwyning van apartheid is 'n aanvanklike poging aangewend om behuisingverantwoordelikhede na werkers in terme van eienaarskap-familiebehuising oor te dra. Nietemin, die reaksie in kleiner stedelike sentra en tussen laer-inkomste mynwerkers was beperk. Hierdie artikel oorweeg alternatiewe in behuisingvoorsiening en beplanning, neem in berekening die realiteite in die nadraai van apartheid, en die globale verbinding tussen die mynindustrie en die droë natuur van Kathu se omgewing. Hoofsaaklik, argumenteer hierdie artikel dat alhoewel daar aanduidings van alternatiewe vorms van behuising en eiendomsreg is, is die oplewing-mislukkingsiklus van mynwese en die ariede aard van die omgewing minder prominent in die regverdiging van hierdie veranderinge.

MERAFO LE MATLO: TABA YA “MOTSE O KA TLASA DIFATE” (KATHU - AFRIKA BORWA)

Kgale kgale, matlo a neng a tsamaiswa ke ba merafo e ne e le yona feela kgetho bakeng sa basebeleetsi ba morafa. Basebeleetsi ba neng ba fumana moputso o tlase ba ne ba dula ka hare matlo a kopanetsweng a re re tsweng banna feela, ha basebeleetsi ba neng ba fumana moputso o motle ba ne ba fumana ntlo ya morafa jwalo ka diotlo tsa tshabeletso. Ho feela ha kgethollo ho tlisitse maiteko a ho leka ho fetisetsa maikarabelo a matlo ho basebeleetsi ka ho leka hore matlo e be a basebeleetsi bakeng sa boikarabelo ba lelapa. Le ha ho le jwalo, ditorotswaneng tsennyane le batho ba meputso e fatshe, ba ile ba hloleha. Tokomane ena e leka ho fumana mekgwa e meng bakeng sa ho fumantshwa matlo le moralo, re ntse re utlwisisa dinette tsa ditlamorago tsa kgethollo, dikamano tsa lefatshe ho tsa merafo, le maemo a bohwatata ho boelwang ke tokomane ena ke hore, le ha ho ena le diitshupetso tsa mekgwa e meng ya phumantsho ya matlo, koketso ya merafo la maemo a bohwatata ba sebaka, ha se ntsha tse bohlokwa / bonahalang ho ka pakela diphetoho tsena.

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¹ The Tswana word for “Village under the trees”

² The Sishen Expansion Project I (from 2007, in full operation 2009) had a budget of R5.1 billion; and an envisaged second phase of the project was being considered in a pre-feasibility study, with a report due in 2007 (Kumba, 2007), however as of the time of writing the report was still not available and no further mention of the project was made on Kumba's website as of November 2009.

1. INTRODUCTION

South Africa's economy has long experienced the benefits of mining. These benefits can be associated with the availability of a range of minerals, high levels of private-sector involvement, state protection and cheap labour (see Crankshaw, 2002 for a review of the South African mining industry). Although many of these aspects received a fair amount of research attention during apartheid (see, for example, Crush, 1992; Crush, Jeeves & Yudelman, 1991; James, 1992a), research on the link between mining, labour, migrancy and housing has been far less prominent since the democratic transition in 1994 (Marais & Venter, 2006: 53). In addition to the low research output, there has been an overall decline in the contribution of mining to the South African economy since the early 1990s. This decline has been the result of the depletion of minerals (especially gold), but can also be ascribed to the fundamental restructuring of the sector in an increasingly global environment (Crankshaw, 2002: 63). In the process, many mining areas in South Africa have experienced the detrimental impact of mine closure. Specific areas that fell victim to these changes include the Free State Goldfields (Binns & Nel, 2001; Nel & Binns, 2001), the coal mines in KwaZulu-Natal (Nel, Hill, Aitchison & Buthelezi, 2003), the diamond-mining area in Koffiefontein (Marais, Pelsler, Botes, Redelinghuys, & Benseler, 2005) and the gold-mining region in the North West (Lotz & Marais, 2007).

Despite the overall decline of the mining sector and the hardship suffered in specific areas, there are also areas that have benefited from increasing mining activity. One such town is Kathu,¹ where iron-ore mining, owing to the increasing demand from growth in the Chinese economy, has laid the foundation for the unprecedented growth of this small town² – a phenomenon that is fairly uncommon amongst small towns in South Africa (van Niekerk, 2007; Van Rooy, 2007).

The world demand for iron ore has increased from just over 850Mtpa (million tons per annum) in 2001 to around 1100Mtpa in 2005. This is almost exclusively due to the increase in demand from China that increased from just under 150Mtpa in 2001 to 350Mtpa in 2005 (Kumba, 2006: 2). The share of Kumba Iron Ore³ exports to China have increased as well, as it shifted delivery from domestic and European clients (where demand decreased) during the economic recession that started in 2008. The company, however, admits that the continued demand for imported iron ore in China is uncertain though it remains "cautiously optimistic" (Reuters, 2009). As can be expected, the renewed investment in the mining sector has led to an increase in employment, as well as an extraordinary increase in the demand for housing.

Kathu is located in a semi-arid area which, according to formal definitions, can be identified as an area that receives between 300 and 600mm of rainfall per annum. As recent research indicates, planning should also take the socio-economic attributes of aridness into consideration – an aspect to which the article will return at a later stage. It is also important to keep in mind that, given the expected climate changes brought about by global warming arid areas such as this would likely see further reductions in rainfall.

Against the background of the large-scale reinvestment in the mining industry near Kathu, the primary question is whether there has been a change in their response on the part of the various participants, considering the lifting of the restrictions pertaining to migration in a post-apartheid era, along with the significant influence of global economic trends. In addition, it would be ideal to determine whether the reality of aridness (closely linked to global warming) is considered in the planning and design of housing and settlement. These questions are relevant, since boom-bust cycles are not uncommon in the mining environment and place extraordinary pressure on planning systems. The global links of the mining industry make Kathu as a settlement, as well as housing processes, more vulnerable, while the arid nature of the environment has serious implications for housing and its

link with livelihood diversification processes. These possible consequences should be acknowledged, despite the fact that there are indications that enough mining reserves exist to last for more than 50 years⁴. Considering these realities, the aim of the article is to assess housing responses in Kathu in a post-apartheid, increasingly globalised and arid environment. Essentially, it is argued that there is evidence of changing approaches in respect of mine-worker housing. However, the larger degree of dependence on global economic trends, within the limited local environment, makes these responses mostly inappropriate and unable to adjust to possible external shocks. In order to develop this argument, the article starts off by contextualising the existing literature on migrancy, mining, globalisation, aridness, and the local planning implications. The housing response in Kathu is then briefly discussed, after which the various responses in housing delivery and planning are analysed in more detail. A number of concluding comments are subsequently put forward. Essentially, the evidence and arguments in this article are regarded as preliminary in nature, comprising a first attempt to debate some of the complex conceptual issues and their planning implications for mining towns and mineworker housing in a post-apartheid and increasingly globalised era, considering the arid nature of Kathu.

The arguments of this article build on a previous article published in the Town and Regional Planning special edition "Reflections on the unfolding of South Africa's 2004 Housing Programme *Breaking New Ground*". In that article (Cloete, Venter & Marais, 2009) it was argued that due to the history and character of migrancy among mineworkers the use of rental and Social Housing was especially suited for housing this group. This article builds on these arguments through the inclusion of the issue of aridness and the inclusion of the wider housing context.

Two primary methodological approaches were followed for the purposes of this article. First, several interviews were conducted with individuals in the municipality and the mining houses in 2007. Secondly, a survey was subsequently

conducted (also in 2007, as part of the second author's Masters' dissertation) in which residents of a new housing scheme (206 questionnaires – 41.7% of the sample) and hostel residents (288 questionnaires – 58.3% of the sample) were asked about their housing needs and means. The sample size was determined in accordance with the guidelines of Sekaran (2000: 253), in terms of which generalised conclusions can be made. Fieldworkers from the Kathu community were trained to conduct the survey and complete the questionnaires.

2. MINING, MIGRANCY, ARIDNESS AND HOUSING: CONTEXTUALISING THE LITERATURE

Historically, mines provided housing to their workers. High-income mineworkers were commonly provided with housing as a fringe benefit (see Marais *et al.*, 2005). For low-income employees, the single-sex hostels were central to housing provision in the mining environment (Demissie, 1998: 445). The single-sex hostel has been linked to an institutional approach to labour migrancy and the low cost of labour in mining areas. The result has been a divide between the male mineworker and his family in rural areas or in neighbouring states, with a range of social consequences (see Head, 1995 as well as Coplan & Thoahlane, 1995 for further discussions on the consequences). During the 1980s, the hostels became a hotbed of political action, as mineworkers became increasingly unionised after the legal recognition of unions in 1982 (James, 1992a: 90,111-124). Dissatisfaction with the hostels, or more specifically the quality of the hostels, was one of the major causes of the strikes. The management of the mining companies then started to steer away from hostels, with the particular aim of protecting their investment in skills and training in more senior workers. A range of incentives were made available to support home-ownership. Furthermore, in cases where hostels were retained, a series of reductions in occupation densities and upgrades were often undertaken (Hunter, 1992: 91; James 1992b: 75; Laburn-Peart, 1992: 106). Mines also tried to privatise their housing

3 This article mainly deals with the housing approach of Kumba. Kumba is one of two mining companies that mine on a large scale in the area. The other company is Assmang.

4 Information gathered in 2007 from interviews with role-players. However, no written documentation is available in this regard. At the same time, this vulnerability is not only linked to the availability of iron ore, but also to the world demand for the mineral.

units for higher-income employees and were generally successful in this regard, although there were some exceptions in respect of such units in small towns (for example, Koffiefontein and Lime Acres (Marais *et al.*, 2005)) where the closure of the mines meant that there was no local demand for these housing units leaving extensive infrastructure and housing unutilised.

Several attempts were made by gold-mining companies (notably Anglo and JCI) to provide privatised family housing units to their workers since the mid-1980s (Hunter, 1992). However, these attempts have not met with as much success as the companies had anticipated, as only a small percentage of mineworkers have taken up this option. Reasons for this failure include: the fact that the companies overestimated the number of workers who would wish to participate, and their ability to meet the mortgage payments; insufficient consultation with workers as to their needs and financial abilities; inadequate dissemination of information; insecurity pertaining to continued employment at the mines; the unwillingness of miners to sever their rural ties for what they perceive as the 'expensive and violent city'; and the fact that some workers own, or plan to build homes in the labour-sending areas (Hunter, 1992: 96-97; James, 1992b: 80; Laburn-Pearl, 1992: 107-108). Against this background, Marais & Venter (2006: 61) conclude that for a significant percentage of mineworkers, the hostels remain the only viable option.

However, much of the mineworker housing debate has been contextualised in the metropolitan environment, especially in Gauteng. As a result of the high economic growth and diversity of economic opportunity in this province, the impact of mining cycles is less profound, as economic diversity away from mining is more likely. Yet international literature suggests that the specific features of mining communities make most forms of permanent residences impracticable in the long run (see as example Archer & Bradbury, 1992). Mining settlements, like other resource-dependent settlements, are subject to boom-bust cycles. When minerals are discovered, the towns are developed at a fast pace; often with the support of the mine, through infrastructure development (see as example Archer & Bradbury, 1992: 198-203). Small populations, remote locations and unproductive areas surrounding the mines, combined

with the success of mine employment (versus the available alternatives) and, in many cases, authoritarianism on the part of mine management, contribute towards the repression of possible economic diversification, making the towns and their residents vulnerable to the future closure or downscaling of the mines, which is more than likely to occur at some stage (O'Faircheallaigh, 1992: 348). This has led many mining companies in Australia's desert regions to follow an approach in terms of which workers are transported to the mines on a weekly basis, making the establishment of permanent mining settlements unnecessary (Houghton, 1993).

The problematic provision of mineworker housing has been further illuminated by a growing body of international literature on the specific problems associated with developing sustainable human settlements in arid and semi-arid areas – such as Kathu (see, for example, Reynolds, Stafford Smith, Lambin, Turner, Mortimore, Batterbury, Downing, Dowlatabadi, Fernandez, Herrick, Huber-Sannwald, Jiang, Leemans, Lynam, Maestre, Ayarza, & Walker, 2007). Characterised by specific socio-economic features (variability, sparse population, low productivity, the 'distant voice' and remoteness), arid areas tend to lag behind their temperate counterparts in terms of many development indicators (Reynolds *et al.*, 2007: 847; Mortimore, 2005: 10).

By definition, arid regions receive very little rainfall, and the rain that does fall is highly seasonal and highly unpredictable (both within the season as well as across multi-year periods) and is accordingly termed 'variable' (Mortimore, 2005: 10; Tewari & Arya, 2005: 1-2; Le Blanc & Perez, 2008: 320). Temperatures also vary greatly between seasons and even during the day-night cycle. Related to the low rainfall are the very low levels of organic material present in the soil of drylands. The combination of the two factors leads to low productivity. Low soil productivity and lack of water, in turn, lead to very sparsely populated areas (Le Blanc & Perez, 2008). The difficulty and cost related to the provision of services in these regions lead to ineffective and faulty service plans, even though these might previously have been successful in other regions. The distances between residents and settlements in these regions make it difficult to provide services, and this leads to development backlogs in comparison with other, less arid, regions

(Thomas, Twyman & Harris, 2002: 193; Mortimore 2005: 10; Reynolds *et al.*, 2007: 847). The residents thus remain no more than a 'distant voice' to the policymakers because they are located far from both the main centre of power and the more local centres, which again affect implementation (Reynolds *et al.*, 2007: 848). Arid regions are lastly linked to remoteness. Definitions of remote vary according to region and are open to interpretation. One approach, conceptualised by Leven (1986, cited in Huskey, 2006: 149-150), gives insight into the social nature and consequences of remoteness. Leven focussed on what he termed 'economic remoteness': the remote location of a site as the cause of limited economic development. Economic remoteness is to a large extent caused by what Leven termed 'geographic remoteness' (or geographic isolation). However, two other factors play a role: 'cultural remoteness' or the wish of people in the area to remain there for whatever positive reason and 'institutional remoteness' or the impact of the policies implemented by government, which might be inappropriate for the region. The last factor can also be linked with the concept of the 'distant voice' already mentioned. These realities thus obviously imply that the options in respect of the diversification of economies do not run beyond basic extensive agriculture.

Livelihood diversification is the process by which a household expands its forms of income, social networks, land rights, access to social institutions, and social services to different sources with low covariate risk (risk of simultaneous failure) in order to cope more effectively with pressures from their environment (both biophysical and socio-economic) (Ellis, 1998: 2). Among the most prominent forms of livelihoods – and a popular choice for diversification – are land-based strategies (Shackleton, Shackleton & Cousins, 2001). In arid regions, pastoralism predominates over other forms of mixed farming. This can, for the most part, be attributed to the low productivity of arid soils (Tewari & Arya, 2005: 2, 4). However, arid regions are also very susceptible to overgrazing as a result of variable rainfall and drought (Reynolds *et al.*, 2007: 847, 849). Problems are further experienced in respect of service delivery in arid regions. Turbett (2004: 988), in an overview of social work issues in remote rural locations, emphasised the effects of isolation while Woollett (1990, cited in Asthana &

Halliday, 2004: 458) discussed the cost implications of providing services in rural areas. Problems include: difficulties with economies of scale (more cost-efficient large centres cannot support the geographically diverse community, while smaller, dispersed centres are expensive), higher travel costs, unproductive time (spent in travelling), issues related to staffing, and institutional costs relating to training and development

Given the lack of more mainstream economic opportunities, livelihoods in these areas are precarious and often dependent on only a few sources of income. When these sources come under pressure, the communities have very little recourse to government support, owing to their physically and politically remote locations (Ellis, 1998: 25-27; Reynolds *et al.*, 2007: 848).

The combination of the above-mentioned factors results in specific planning challenges that need to be faced when the housing options of mineworkers in South Africa's arid and semi-arid areas are being considered. Amongst an array of possible questions, the main question that arises is whether the boom-bust cycle of mining is being taken into account in the current housing options by authorities, mining houses and mineworkers, within the economic limitations of the semi-arid environment where Kathu is located.

3. HOUSING PROVISION IN KATHU

As already noted, Kathu in the Northern Cape has lately experienced an extraordinary growth in the demand for housing, due to the increased demand for iron ore from China. As in the case of many small towns, the economy of Kathu is largely based on a single resource: iron ore. The mine was founded by the erstwhile company, ISCOR⁵, just after the Second World War; and the town of Sishen was established. The ore in the area has always been extracted by means of an open-quarry method; and over the course of time, the length of the quarry necessitated a shift in the location of Sishen, resulting in the founding of the town of Kathu in the 1970s, approximately 15km to the east (Nel & Van Wyk, 2007).

Owing to a combination of factors, such as the backlog caused by apartheid mineworker-housing strategies, the fact that the mines have sold the residential properties that they historically owned, and the recent expansion of mining activities, a substantial housing shortage has arisen in Kathu (Nel & Van Wyk, 2007). In addition, increased private-sector interest as a result of expanding mining activities⁶ has seen the prices of houses skyrocketing⁷. As a consequence, middle-income mineworkers have found it increasingly difficult to access housing in the town. In an attempt to provide housing for their workers, the Kumba mining company contracted the Matlapeng Housing Company, which is subsidised indirectly by various methods, to assist in this regard. In some cases, Kumba donated the land and paid for the provision of infrastructure; while the institutional housing subsidy from the government has also been utilised for those households that qualify. Three different models of tenure are followed in this regard (Nel & Van Wyk, 2007):

- Individual ownership - this option is available for those who can afford it, in cases where the approval of the banks can be obtained. The survey indicated that 27.5% of households in the new housing development have opted for this form of tenure.
- Instalment sale agreements - the house is acquired by means of an instalment sale agreement, which means that formal transfer does not take place on day one. Half of the households that were interviewed selected this option. The immediate advantage of the instalment sale is that it provides an option for households whose credit record is not good enough to qualify for a mortgage bond. Although there is very little difference between the monthly payment in respect of the instalment sale, and the payment that applies in the case of a mortgage bond, the fact that transfer does not take place at the beginning of the transaction contributes to a reduction in initial costs. At the same time, the instalment finance model is designed (obviously at a cost) to allow the participant to default for approximately three

months. A further advantage of this approach lies in the fact that, should the household be unable to pay the instalments, they would lose their house, but would not be blacklisted for defaulting on a mortgage, or held responsible for the asset, since in such cases the house remains the property of the Matlapeng Housing Company.

- Rental option - finally, it is also possible to rent the housing unit from Matlapeng. The remainder of the sample – 22.5% of households – fell into this category. Rental housing is between 20% and 40% cheaper than the instalment sale or the ownership option.

In addition to these options, it should also be borne in mind that 1 400 workers are still officially residing in the mining hostels, while a significant percentage of mineworkers (the authors were unable to determine the exact number) have also found private accommodation outside of the above scheme. It should also be noted that Assmang, following the same approach outlined above, is also in the process of developing at least 400 new housing units for mineworkers (Nel & Van Wyk, 2007).

4. CONFLICTS RELATING TO HOUSING PROVISION IN KATHU

Considering the literature review and the brief overview of housing provision in Kathu, the emphasis now shifts to an assessment of critical conflicts concerning housing and housing provision. Three specific aspects will be assessed in more detail. First, the focus will be on the question as to how mineworker migrancy has changed, and how these changes impact on housing delivery and housing options in a post-apartheid era. Secondly, consideration will be given to the degree to which aridness impacts on housing, housing alternatives and the ability to consider alternative livelihoods. Finally, attempts will be made to determine whether there is any indication of increased levels of integration in respect of housing and planning. In addressing these three aspects, the twofold question will also be asked: What are the implications of possible boom-bust cycles? And do the various actors actually consider the implications of economic cycles?

5 ISCOR was unbundled in 2001 to form ISCOR Steel (now ArcelorMittal SA) and Kumba Resources which was unbundled further in 2006 to form Kumba Iron Ore and Exxaro Resources.

6 The availability of a landing strip for small aeroplanes makes the town an ideal gateway to the tourism and hunting possibilities of the Kalahari.

7 The price of an average house in Kathu has increased three- to fourfold over the past twelve years (Nel & Van Wyk, 2007).

4.1 Migrancy and future housing options

As already noted, migrant labour has a long institutional history in the South African mining industry. The question that arises is thus: To what degree is migrant labour also a process undertaken by families to diversify livelihood sources? Furthermore, do mineworkers see Kathu as their area of permanent residence? The results of the 2007 survey show that approximately 93% of respondents indicated that they are residing in their current location because of its proximity to the workplace, and to employment opportunities (i.e., to the mine) – confirming the dependency on the mine (Cloete, 2009: 61). However, just over 20% of the residents of the housing scheme and 55% of hostel residents indicated that they did not wish to reside permanently in Kathu (Cloete, 2009: 63). When asked which area they actually regarded as their permanent home, just under one-third of the residents indicated that their permanent home was not in the Northern Cape; and more than half of these respondents indicated the North West Province as their preferred place of residence (Taken directly from data of 2007 study). Further indications of continued migrancy between the mine and the labour-sending area can be found in empirical evidence that revealed that, in 43.9% of cases, the partner of the respondent was not permanently residing in Kathu (68.1% among hostel residents alone), while in 48.9% of the cases, the children were not residing permanently in Kathu (64.4% among hostel residents alone) (Cloete, 2009: 74, 77). In both instances, about two thirds of hostel residents indicated that they did not wish their families to join them permanently in Kathu (67.8% for partners and 64.1% for children) (Cloete, 2009: 61-63). The absence of links to Kathu was also reflected when respondents were asked where they would like to retire: only 17.6% indicated Kathu, and 28% indicated that they would prefer to live somewhere outside the Northern Cape (Taken directly from data of 2007 study).

The impression gained from the above statistics is mixed in respect of the future of migrant labour. On the one hand, there is increasing evidence (compared to the findings of the literature) that people view the mine area as a permanent place of residence. On the other hand, links to the rural/sending areas remain strong, even among those

who are currently setting aside large sums of money for housing in the mining area. Furthermore, the overall links with the Northern Cape and with the nearby communal areas are significant, which means that the labour-sending areas are mostly very close – a factor that is significantly different from the situation in the gold mines. If one bears in mind that the income of residents in the housing scheme is considerably higher than that of those in the hostels, then it seems obvious that higher income is one of the main reasons for the desire to reduce the link with the rural areas.

Considering the mixed response regarding the continuity and discontinuity of migrant labour, the question should be asked as to whether the current housing options available to mineworkers are appropriate. A brief overview of the options of tenure and the alternatives relating to the original mining compound was provided earlier in the article. A number of factors should be noted in this respect. First, it seems evident that the fact that alternatives to the compound are available, is a step in the right direction. Second, the results of the survey also suggest that ownership is not the only alternative. For various reasons, a significant percentage of respondents have opted to rent housing or enter into instalment sale agreements. The establishment of the Matlapeng Housing Company has also shifted the financial risk away from the mine, without transferring all responsibility to the individual. Matlapeng also reduces the financial risk for the homeowner, should mining in the area enter a downward spiral.

Although the above conceptualisations provide an overall justification for the housing provision, the question is: how appropriate are the different forms of tenure arrangements in the new housing project, in the experience of the interviewees? Table 1 provides an overview of the appropriateness of the respective tenure options, as perceived by the beneficiaries of the housing programme.

Table 1 suggests a relatively high percentage of acceptability in terms of respondents' experience of their current tenure status. Nearly two thirds of the respondents who are renting their housing units suggested that these units are appropriate, compared with 80% of those who own units and nearly 90% of those who have entered into instalment sale agreements. Interestingly enough, 66.7% of those who indicated that their tenure status was not appropriate, suggested that the ownership option would be more suitable, while 25.9% indicated that the rent-to-own option (effectively the instalment sale option) would be more appropriate. Among the hostel population, 78.5% indicated that they would prefer ownership, while only 4.9% indicated that they would prefer the rent-to-own option.

Overall, the above framework indeed suggests a change of approach in respect of housing and tenure in mining areas when compared with the findings of the literature. The initial mining response in the late 1980s and early 1990s, aimed at shifting the housing responsibility from the mine (through the provision of mining hostels for lower-income earners and the privatisation of mine housing for higher-income earners), made way for a partnership approach between the mine, mineworkers and the private sector, in terms of which a variety of tenure arrangements are now available. However, there still seems to be an explicit need for formal ownership among mineworkers, which, in view of boom-bust cycles in mining and the limited potential of the surrounding environment to assist in bringing about an automatic economic diversification, is a high-risk option for lower-income workers. Furthermore, as argued a little later on, the availability of the various tenure options is more directly related to affordability than to an acknowledgement of the fact that the cyclic nature of mining necessitates alternative tenure arrangements.

Despite the fact that the foregoing information points to the availability of

Tenure status appropriate?	Current tenure status						Total	
	Rental		Ownership		Instalment sale			
	n	%	n	%	N	%	N	%
Yes	27	65.9	33	80.5	76	88.4	136	81.0
No	14	34.1	8	19.5	10	11.6	32	19.0
Total	41	100.0	41	100.0	86	100.0	168	100.0

Table 1: Respondents' views in respect of the appropriateness of tenure in the Kathu mineworker housing project, 2007
Source: Cloete, 2009: 92

a wider range of options, affordability is a major obstacle in realising these options. Affordability is linked to two main components, namely: income, and current expenditure by the mineworkers.

Against this background, a number of comments need to be made in respect of affordability aspects, considering the empirical evidence gleaned from the surveys. Approximately 40% of residents of the housing scheme indicated that they received a combined household income of more than R7 500, while only 4.3% of hostel residents received similar incomes. Furthermore, 41.3% of housing residents and 64.2% of hostel residents indicated that they earned between R3 500 and R7 500 per month (Cloete, 2009: 78), thus falling into the 'gap' market which since 2004 is being served by the Comprehensive Plan for Sustainable Human Settlements (Breaking New Ground). Nearly 70% of residents of the housing community indicated that they were able to pay more than R1 600 per month for housing, while 72.1% of hostel residents indicated being unable to spend more than R800. It should be noted that 20.3% of the hostel residents indicated that they were able to pay more than R1 200 per month for housing (whereas 87.2% of residents of the housing community indicated an ability to spend more than R1 200), which would make them eligible for at least a one-bedroom unit (Cloete, 2009: 102). These broad reflections suggest an available market for housing for households with incomes of between R3 500 and R7 000. Yet, from an affordability point of view, the hostel remains a viable option. Furthermore, income and affordability, rather than an acknowledgement of the cyclic nature of mining, probably comprise the main reason for the variety of tenure options and the appropriateness thereof, as outlined above.

In the final instance, housing in the migrant labour environment cannot be discussed without considering the housing conditions of migrant workers in the labour-sending areas. Two reasons can be cited as to why the conditions in the labour-sending areas should be considered. First, it is sometimes pointed out that housing subsidies should be available to migrant workers in the labour-sending areas. Second, the Mining Charter (DME, 2002: online) has identified "[i]ntegrated socio-economic development for host communities, major labour sending areas" as one of its aims. This effectively places the mining companies among

stakeholders who have undertaken to aid the development of the sending areas. In general, the housing situation in the sending areas appears to be fairly good. Nearly 80% of respondents indicated that they have some kind of formal housing unit in their area of origin. A further 18.5% indicated access to a traditional dwelling, while only 2.3% indicated living in an informal dwelling. The above information also provides some indication that the scope for intervention in the sending areas is limited, although this aspect requires more detailed research.

4.2 Alternative livelihoods in an arid area and the implications thereof for housing

Three questions are posed in this section: To what degree do mineworkers and mining companies realise that they are located in an area with limited potential for economic diversification? What are the implications for housing planning? Thirdly, to what degree does housing design take the inherent reality of climatic variability into account?

As noted in the literature review, there has been increasing pressure on mining companies to plan ahead, with a view to finding alternatives to mining in a post-mining era. In fact, the new *Minerals and Petroleum Resources Development Act (MPRDA)* of 2002 requires that specific environmental and social legislation should be complied with on the closure of a mine (RSA, 2003). The location of Kathu in a semi-arid area limits the possibility of agriculture as a driver of economic diversification. The question that arises is thus concerned with how mineworkers are likely to react to the possibility of alternative livelihoods, and how they anticipate employment in a post-mining era.

Among the residents of the housing scheme who were sampled, in the case of those who were married or cohabiting, the spouse or partner was also employed in 61.5% of instances (a significantly higher percentage than among the hostel residents, where only 17.1% of the partners were employed). Approximately 78% of these were also employed in Kathu (Taken directly from the data of the 2007 survey). However, this form of income would probably involve some co-variant risk, since in such cases, both incomes are likely to be directly or indirectly dependent on the mines. When residents of the housing scheme were asked whether

they would have an alternative form of income if the mine were to close down, only one third (33.5%) indicated that this would be the case. This percentage was significantly higher than in the case of hostel residents, of whom only 15.4% indicated that they would have an alternative income. The form taken by these alternatives mostly comprised business ventures (41.2%) or the utilisation of a marketable skill (29.4%) – both of which would require a clientele largely drawn from the mine (Cloete, 2009: 113-114). Most of the alternatives to mine income that were mentioned are thus indirectly linked to the continued existence of the mines, and would be difficult to sustain without the mine. What seems evident from the above realities is that mineworkers do not tend to consider the longer-term consequences of mining, either for their livelihood or for their housing-tenure options. The town of Kathu is thus highly susceptible to mining cycles of the resource market, owing to the fact that most of the growth is directly and singly linked to the rapidly-growing Chinese economy and its cycles. Fundamentally, the question is what would happen to Kathu should demand from China seize. In addition, the town's location in a semi-arid area limits the development of alternative livelihoods to sustain the housing options of workers.

Moreover, aridness also has implications for housing planning and design. Given the conditions attendant on a variable climate, highlighted earlier, houses in arid areas have to contend with extreme climate variations. The question is: To what degree have new housing developments taken account of the aridness of the area and the accompanying variability of aspects such as rainfall and temperature? Respondents were given sixteen criteria according to which they were required to rate the home received. The two criteria that received the lowest ratings were temperatures in summer and temperatures in winter (with, respectively, 55.9% and 56% of respondents indicating that they were not satisfied at all or somewhat dissatisfied) (Taken directly from data of 2007 study). It seems evident from these results that climatic variations have not received adequate attention in housing design and overall planning especially if one considers the fact that these were not built as low-cost housing. However, one should immediately acknowledge that the lack of mechanisms to counter climatic variability is seldom present

in low-cost housing in the rest of the country. However, the larger degree of climatic variability in arid areas cannot be ignored.

4.3 Working together to ensure municipal infrastructure for housing

Housing development and planning for housing have serious implications for local municipalities. An understanding of mine expansion and decline is pivotal for the planning of land availability and bulk and internal infrastructure. Mines are commonly censured on the grounds of the fact that surrounding communities and institutions are seldom informed about the mines' plans to expand, scale down or close (CDS, 2004). Although it should be acknowledged that there are sometimes legitimate justifications in this respect, the interrelationship between mines, communities and institutions is not always conducive to longer-term planning. For example, the Sishen Expansion Project originally envisaged only 324 permanent positions and a temporary construction team of 1 800 (Pretorius & Hoffmann, 2006). However, on the completion of Phase 4 in 2009, the Matlapeng housing company alone would have added 1 673 houses to Kathu (Nel & Van Wyk, 2007). In the process, the municipality has been unable to make adequate provision in respect of bulk and internal services. This problem was aggravated by the fact that all land available for residential development surrounding Kathu was in the hands of the mining companies, or in the hands of private developers who had bought this land from the mining companies. In the process, developers were thus able to manage the process of township establishment without much communication with the local municipality.

The problem regarding the availability of water in Kathu represents a second example of the lack of longer-term planning. Historically, the main sources of water were boreholes and underground water extracted from the mines. The provision of water was undertaken by means of a dual system of water provision. One set of pipes provided water for gardens, while the other supplied water for household use. However, more recent developments in Kathu have seen the abandonment of the dual system, owing to the cost of the initial infrastructure. Problems have also been experienced as a result of the increase in the water demand

occasioned by the growth of the town; and a local pipeline between the town and the Orange River now supplies water to the town. This link is under pressure, however, as other remote towns are also dependent on the water provided by this pipeline further down the line (Botha, 2007).

What is evident from these examples is that the municipality is hesitant (and, in a certain sense, rightfully so given the possibility that the mine could close leave them with under utilised infrastructure to maintain) to extend bulk and internal infrastructure. Although this can be ascribed to poor communication and the fact that municipal decision-making entails a much longer process than is the case in the private-sector environment, it also demonstrates how difficult it is to plan in an integrated manner in mining towns. Furthermore, municipalities are also obliged to bear the brunt of boom-bust cycles in the mining industry, if they provide infrastructure which will remain unutilised as a result of these cycles (see, for example, Marais *et al.*, 2005, with regard to Koffiefontein).

5. CONCLUSION

This article has asked the question as to whether mines, municipal authorities and individual mineworkers are following a different approach in a post-apartheid and more globalised environment, compared to the approach followed before 1994. In addition, it was contextualised using the case of Kathu within the available literature on the socio-economic realities of arid and semi-arid areas. The overall assessment in terms of the question as to whether there is a difference in current operations, provides a mixed impression. On the one hand there has been a move away from the single-sex hostel to other models of housing provision, including ownership by the individual, rental housing and the instalment-sale approach. The availability of a range of housing options represents a shift in the right direction. Yet, owing to affordability considerations and continued patterns of migrancy, mining hostels (at least in a more humane format) remain a viable housing option for a significant percentage of lower-income mineworkers. On the other hand, there is also evidence suggesting that neither the semi-arid nature of the mining environment, nor the cyclic nature of mining (associated with the increasing globalisation of mining in Kathu), is well understood, or used as a justification for introducing

alternative forms of housing tenure and finance; while host communities, local institutions and mines still find it difficult to plan in a coordinated manner.

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